

REVISION OF THE NEOTROPICAL GENUS *TRACHAGATHIS* VIERECK (HYMENOPTERA: BRACONIDAE: AGATHIDINAE)

MICHAEL SHARKEY

S-225, Dept of Entomology, University of Kentucky, Agric. Sci. Bldg-N.,
Lexington, Kentucky, 40546, USA
email: msharkey@uky.edu

Abstract

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Two new species of *Trachagathis* Viereck are described and two species are synonymized under *Trachagathis rubricincta* (Ashmead). The generic limits of the genus are expanded to include species that do not have an elongate gena.

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Introduction

Viereck (1913) proposed the genus *Trachagathis* with *T. taeniogaster* Viereck as the only included species, based on one specimen from Paraguay. Sharkey (2006a) discussed the phylogenetic position of *Trachagathis* and presented evidence for a monophyletic *Trachagathis* including the type species plus two additional species, *Agathis rubricincta* (Ashmead, in Riley et al. 1894), and *Agathis depressifrons* (Braet and van Achterberg 2003), which were transferred to *Trachagathis* as part of his redefinition of the genus. All of the above species are here treated as *Trachagathis rubricincta*, and two additional species of *Trachagathis* are described as new. All three species in the genus are neotropical and appear to be uncommon. Terminology follows Sharkey and Wharton (1997).

Systematics

Trachagathis Viereck, 1913

Type species: *Trachagathis taeniogaster* Viereck, 1913

Diagnosis. Members of *Trachagathis* may be distinguished from all other agathidines by the presence of a groove running from the lateral ocellus anterolaterally to the superior orbit of the compound eye (Figs. 1c, 2c); this is a unique structure within the Agathidinae (Sharkey 2006b). All species have extensive granulate sculpture on many parts of the body including the propodeum, hind coxa (Fig. 3b), and first metasomal median tergite. Sharkey (2006b) provides a key to the New World genera of Agathidinae.

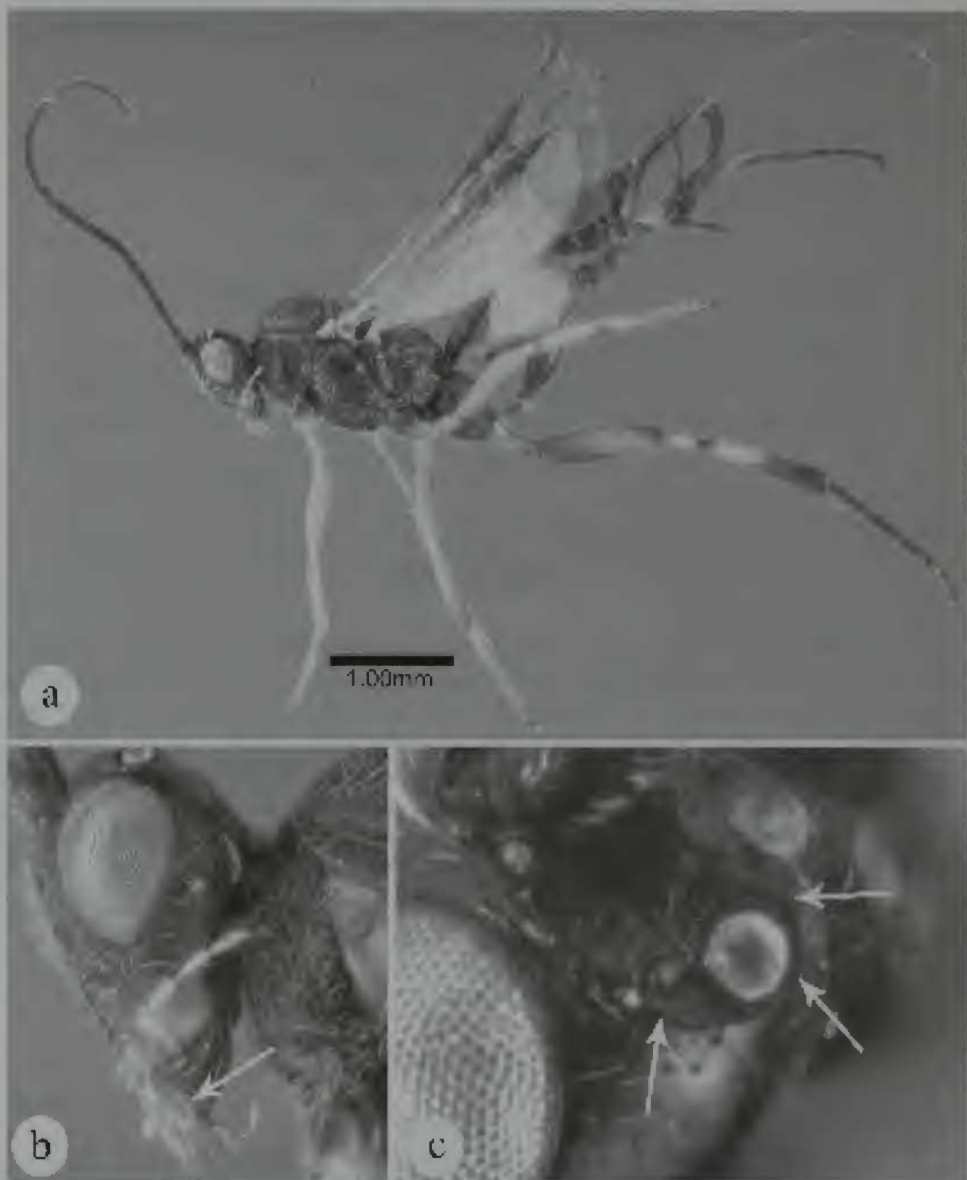


FIGURE 1. A) *Trachagathis pengellyella*, lateral habitus; B) *T. pengellyella*, head lateral aspect; arrow points to galea; C) *T. pengellyella*, detail of head, dorsolateral aspect, left arrow points to transverse groove, right arrows indicate that the medial margin of the groove is sharp.

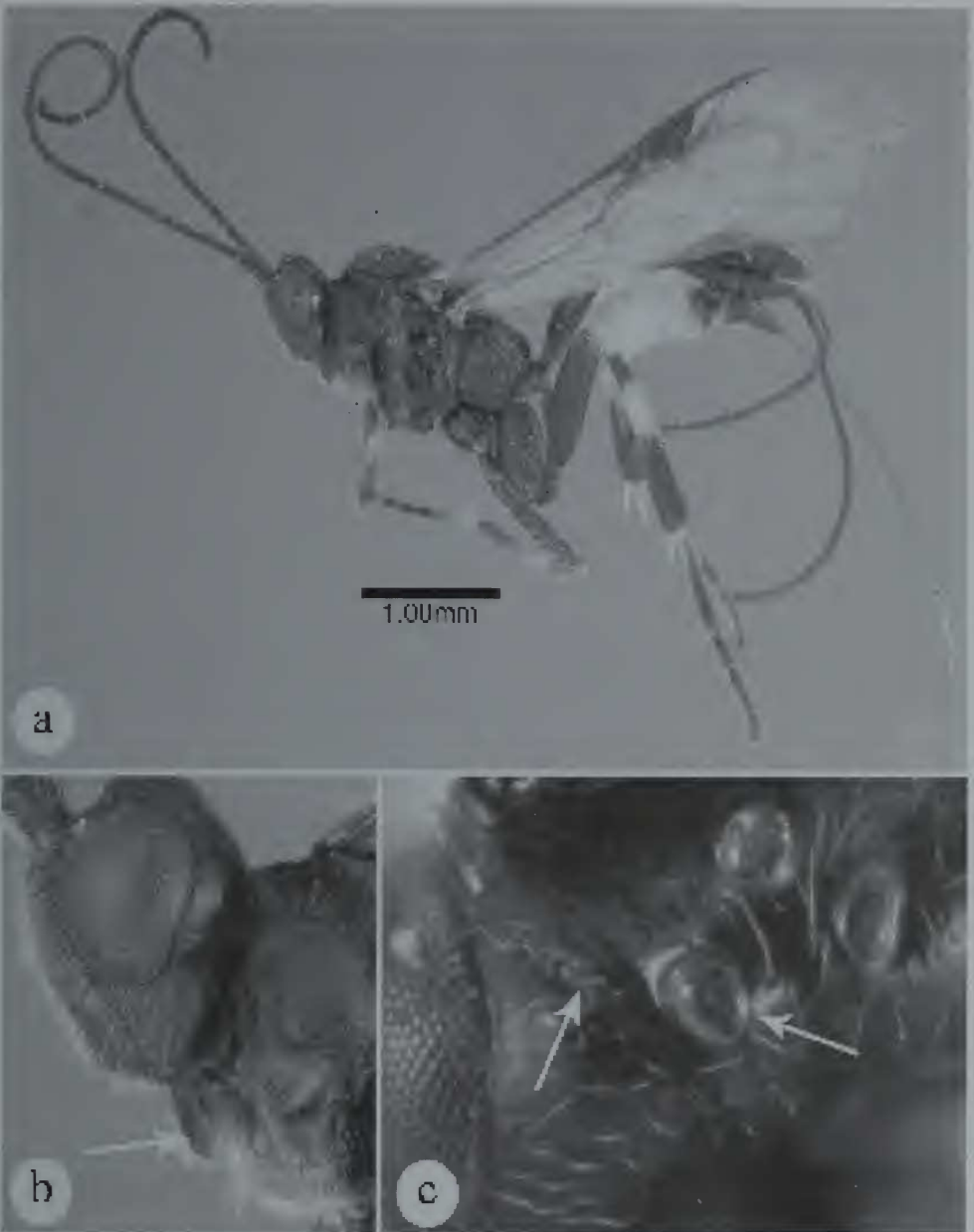


FIGURE 2. A) *Trachagathis townesiella*, lateral habitus; B) *T. townesiella*, head lateral aspect; arrow points to galea; C) *T. townesiella*, detail of head, dorsolateral aspect, left arrow points to transverse groove, right arrow indicates that the groove is not present medial to the ocellus.

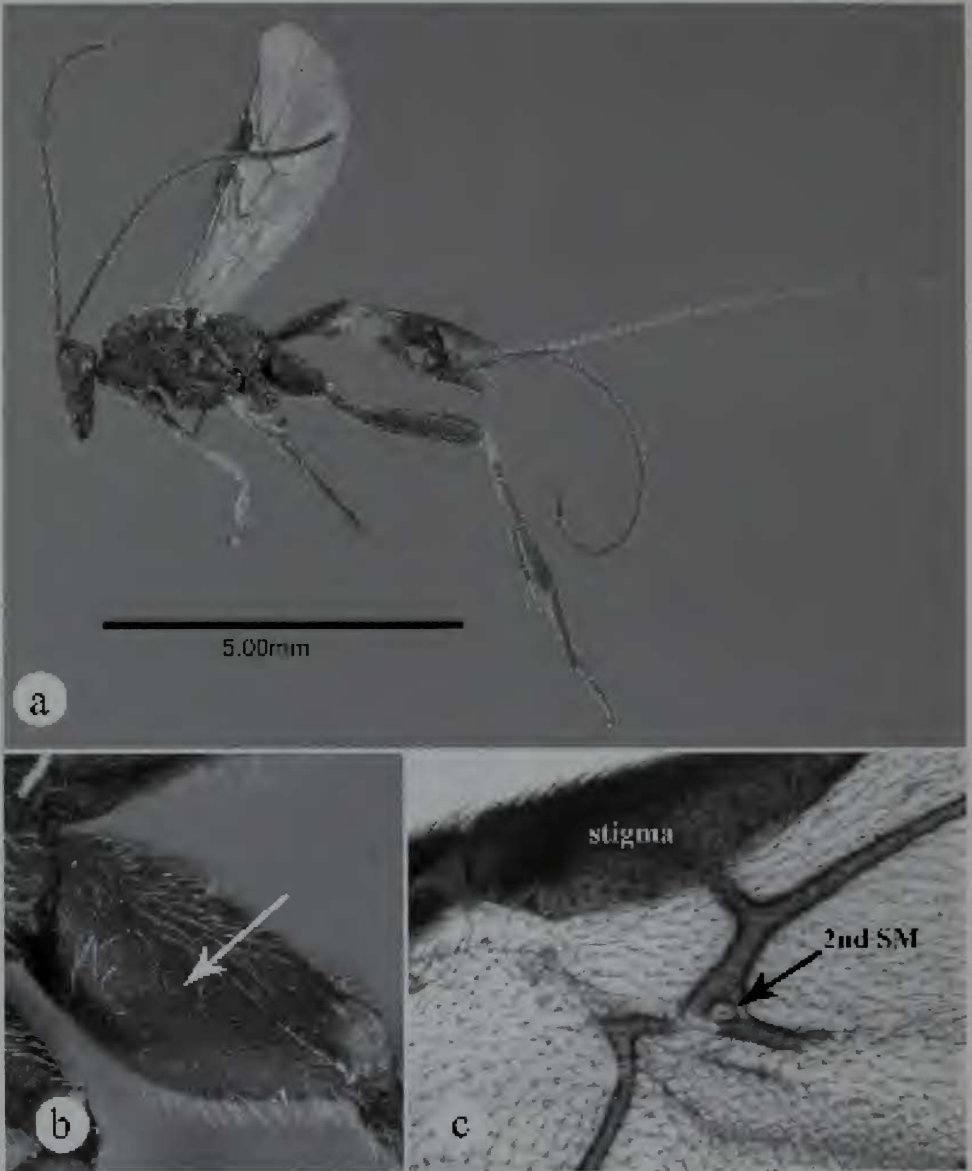


FIGURE 3. A) *Trachagathis rubricincta* lateral habitus; B) *T. rubricincta*, lateral surface of hind coxa showing granulate sculpture; C) *T. rubricincta*, detail of forewing showing small second submarginal cell (2nd SM).

Description. **Length:** 3.5-7.0 mm. **Head:** Number of flagellomeres 28-42; maxillary palpus 5-segmented, labial palpus 4-segmented, 3rd segment varying from subequal to 4th segment to about 1/5th the length of the 4th segment; longitudinal ridge running between the antennae; groove running from the medial margin of lateral ocellus anterolaterally to the superior orbit of the compound eye (Figs. 1c, 2c); gena not expanded, in the form of a flange, posteroventrally; galea elongate from slightly longer than wide to more than two times longer than wide. **Mesosoma:** Notauli impressed and foveolate; scutellum with posterior transverse ridge weakly indicated; propodeal sculpture variable, from entirely granulate, to entirely areolate rugose, often with a combination of the two sculptures; hind coxal cavities closed with a wide sclerite separating the coxal cavities and the metasomal foramen; metasomal foramen bordered ventrally by a high carina; propleuron lacking projection; sternaulus impressed and foveolate; second submarginal cell of forewing petiolate and very small (Figs. 3c, 4d); vein RS2b absent, RS+M absent; Cub of hind wing usually absent, rarely indicated as a stub in large specimens; foretibia lacking spines; midtibia with preapical and usually with apical spines; hind tibia with apical spines; all tarsal claws with truncate basal lobe; row of pectination visible on basal lobe of some specimens. **Metasoma:** 1st median tergite granulate, lacking longitudinal carinae; 2nd median tergite granulate, but sculpture weaker than that of 1st; ovipositor length subequal to body length. **Colour** (Figs. 1a, 2a, 3a): All three species are predominantly black except 2nd metasomal tergum pale yellow some lighter colour on the legs, including one or two light bands on hind tibia (Figs. 4a-c) and sometimes lighter colour on the mouthparts, lower gena, and posterior orbit; wings hyaline.

Biology. Sharkey (2006a) reported *Elasmopalpus lignosellus* (Zeller), the lesser cornstalk borer, as a host for *Trachagathis rubricincta*.

Comments. As mentioned in Sharkey (2006a), *Trachagathis* is probably a derived clade of the *cinctus* group of species that is presently placed in the polyphyletic genus *Bassus*. As shown in Sharkey et al. (2006) all members of Agathidinae other than members of Disophrini and Cremnoptini would have to be transferred to *Bassus* to render it monophyletic. For the sake of nomenclatorial stability it seems better to maintain the polyphyletic concept until a more in depth study is undertaken. Members of *Trachagathis* and the *cinctus* group share granulate sculpture which is otherwise rare in the subfamily. Transferring members of the *cintus* group to *Trachagathis* is also premature since this character state is the only evidence of monophyly. Hopefully molecular evidence, which is not yet available for *Trachagathis*, will clarify its phylogenetic position. In the original description of the genus (Viereck 1913) and in Sharkey's (1997) key, the groove running between the lateral ocellus and the superior orbit of the eye was referred to as a carina; I here follow Braet and van Achterberg (2003) in referring to it as a groove.

Distribution: Although known from only a total of about 85 specimens, *Trachagathis* appears to be widely distributed in South America east of the Andes from the Guyanas to northern Argentina. *Trachagathis rubricincta* also occurs in the Caribbean on both the Lesser and Greater Antilles, but since it has a host associated with corn and sugarcane (Sharkey 2006a), this distribution may have been influenced by agricultural trade.

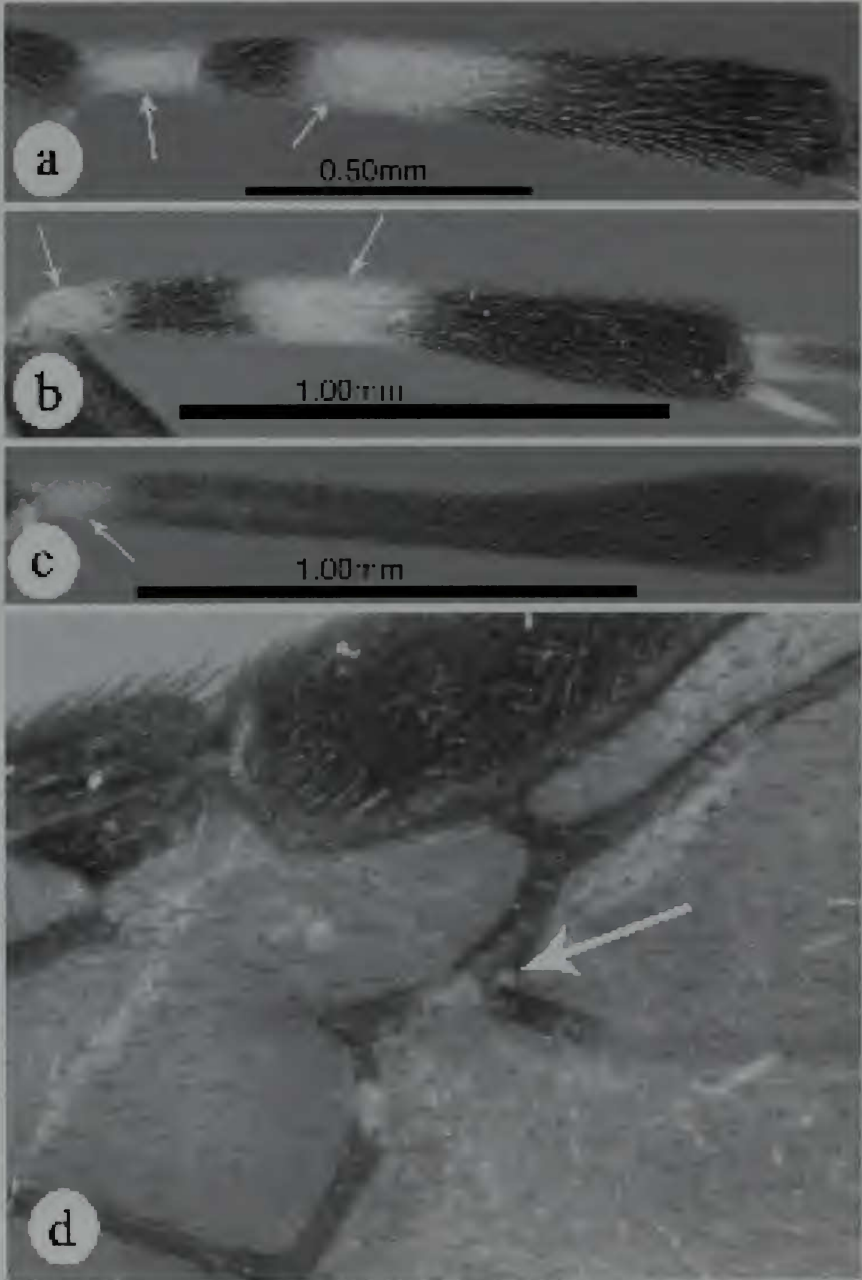


FIGURE 4. A) *Trachagathis pengellyella*, hind tibia illustrating colour pattern; B) *Trachagathis townesiella*, hind tibia illustrating colour pattern; C) *Trachagathis rubricincta*, hind tibia illustrating colour pattern; D) *Trachagathis rubricincta*, detail of forewing of holotype of *Agathis depressifrons*.

Key to species of *Trachagathis*

- 1 Hind tibia with single pale band, positioned basally (Fig. 4c)
 *T. rubricincta* (Ashmead)
- Hind tibia with two pale bands, one basally and one near midlength (Figs. 4a, b)
 2
- 2 Transverse groove on frons only extending to lateral margin of lateral ocellus (Fig.
 2c); mid femur melanic *T. townesiella* n.sp.
- Transverse groove on frons extending to medial side of lateral ocellus (Fig. 1c); mid
 femur yellow *T. pengellyella* n.sp.

Species Treatments

Note: In the species descriptions, variation for continuous and meristic characters is given in parentheses.

Trachagathis rubricincta (Ashmead) (Figs. 3a-c, 4c-d)

Agathis rubricincta Ashmead, 1894 (Holotype examined)

Trachagathis rubricincta, Sharkey 2006a

Trachagathis taeniogaster Viereck 1913 N. Syn. (Holotype examined)

Agathis depressifrons Braet and van Achterberg, 2003. N. Syn. (Holotype examined)

Trachagathis depressifrons, Sharkey 2006a

Diagnosis. Hind leg melanic except for a pale band at extreme base (Fig. 4c); galea more elongate than other species, clearly longer than wide (Fig. 3a).

Description. Holotype Female. Length: 5.23 mm (3.82-6.48) **Head:** Antenna with 37 (35-42) flagellomeres; penultimate labial palpomere subequal in length to apical palpomere; galea elongate, clearly longer than wide (Fig. 3a); malar space long, 0.74x eye height; groove between lateral ocellus and compound eye deeply excavated; sharp medial margin of groove extending past medial margin of lateral ocellus (c.f. Fig. 1c). **Mesosoma:** mesoscutum with deep irregular punctures; notauli crenulate and deeply impressed; median areola of metanotum rounded, rugose and irregular apically, propodeum with granulate microsculpture and some with areolate rugose macrosculpture, pronotum granulate with some rugose sculpture; mesopleuron with deep irregular punctures over much of surface. often granulate posteriorly; sternaulus deep and crenulate; metapleuron granulate: second submarginal cell of forewing small (Fig. 3c); Cub vein of hind wing represented by a small bulge on cu-a. **Metasoma:** 1st median tergite granular with small longitudinal rugosities anterolaterally; 2nd median tergite weakly granulate, 3rd median tergite weakly granulate anteriorly becoming smooth posteriorly; remainder of metasoma smooth; ovipositor slightly longer than body length. **Colour** (Fig. 3a): Black except yellow or yellowish brown as follows: some mouthparts, posterior orbit of eye, fore and middle legs apical to the basal 3rd of the femora, extreme base of hind tibia; 2nd metasomal segment and parts of sterna, and laterotergites of 1st and 3rd metasomal segments.

Males. Only 4 of the 67 specimens examined were males. Except for sexual characters they are very similar to females. All of the males are rather small, the smallest specimen is a male with a body length of 3.68 mm.

Biology. Two rearings from the Commonwealth Institute of Biological Control in the Caribbean resulted in host records from the lesser cornstalk borer, *Elasmopalpus lignosellus* (Zeller). One of the hosts was reared from sugarcane and it is likely that they both were, though one specimen lacks this detailed label data. Full data for these specimens is given in Sharkey (2006a).

Variation and Comments. The specimens here treated as *T. rubricincta* vary significantly in body length. Specimens from the eastern and southern Amazon basin are particularly large. I have looked carefully at these specimens for other characters that might suggest separate species status, but could find none. The second submarginal cell of all specimens is very small, especially so in the holotype of *Agathis depressifrons* (Fig. 4d) where it is little more than an indentation at the point where veins 2RS and M meet. However there is continuous variation from this size to that of Figure 3c, which is the most common for the species.

Distribution. Widespread in the Caribbean, and recorded from the following South American countries: Argentina (Tucumán), Brazil, Peru, Bolivia, and French Guyana.

Type Material Examined. Holotype Female: *Agathis rubricincta* Ashmead, "Windward Side, St. Vincent, W.I." [West Indies], British Museum (Natural History). **Holotype Female:** *Trachagathis taeniogaster* Viereck, "Paraguay (San Bernadino) K. Fiebrig, S.V., 19_iv [sic.], Type" Museum für Naturkunde der Humboldt-Universität, Berlin, Germany. **Holotype Female:** *Agathis depressifrons* Braet and Achterberg "Guyane française: Sinnamary, Pointe Combi, 2-9-xi.2000, Malaise trap, 5°18'N–52°57'W, P. Cerdan [sic = Cerda] - lab Hydrobiologie", Nationaal Natuurhistorisch Museum, Leiden, Netherlands.

***Trachagathis townesiella* Sharkey new species** (Figs. 2a-c, 4b)

Diagnosis. Hind leg melanic except for 2 white bands (Fig. 4b), one at the extreme base and one just basal to the mid-point; transverse groove on frons only extending to lateral margin of lateral ocellus (Fig. 2c).

Description. Holotype Female. Length: 4.00 mm (3.85-4.12). **Head:** Antenna with 33 (32-33) flagellomeres; penultimate labial palpomere slightly more than half as long as apical palpomere; galea moderately elongate, clearly longer than wide; malar space not elongate (Fig. 2b), 0.45x eye height; groove between lateral ocellus and compound eye weakly excavated; medial margin of groove ending on lateral margin of lateral ocellus (Fig. 2c). **Mesosoma:** Mesoscutum with irregular punctures; notauli deeply impressed, smooth, or with a few weak crenulae; median areola of metanotum truncate apically; propodeum densely areolate rugose, areolae with smaller rugosities; mesopleuron with shallow irregular

punctures over much of surface, often granulate posteriorly; sternaulus deep and crenulate; pronotum granulate; mesopleuron with small scattered punctures; sternaulus deep and crenulate; metapleuron granulate; second submarginal cell of forewing small (c.f., Fig. 3c); Cub vein of hind wing usually absent (represented by short stub in some specimens). **Metasoma:** 1st median tergite granular with small longitudinal rugosities anterolaterally; 2nd median tergite weakly granulate, 3rd median tergite from entirely smooth to weakly granulate anteriorly becoming smooth posteriorly; remainder of metasoma smooth; ovipositor slightly shorter than body length. **Colour** (Fig. 2a): Black except as follows: palpi and some other mouthparts yellow, foreleg dark basally gradually lightening in colour distally, foretibia and tarsus yellow; middle leg except coxa brownish yellow, with a weak light band on tibia; hind tibia with 2 light bands, one basal and another ending at midlength (Fig. 4b); 2nd metasomal segment and sterna and laterotergite of 1st metasomal segment yellow (Fig. 3a).

Males. Unknown.

Biology. Unknown.

Distribution. Atlantic rainforest of southeastern Brazil.

Etymology. Named in honor of Marjorie Townes and the late Henry Townes who collected most of the specimens.

Type Material. **Holotype** ♀, **BRAZIL:** [Rio de Janeiro State], Teresopolis, [22°25'60" S, 42°58'60"W, 1068 m.], 14 March 1966, H. & M. Townes (American Entomological Institute). **Paratypes:** **BRAZIL:** Rio de Janeiro State: ♀, Serra da Bocaina, [23°13'0" S, 44°43'0"W], F. M. Oliveira, (American Entomological Institute). Parana: 2♀, Quatro Barros [sic.] (= Barras), [25°22'0"S, 49°4'60"W, 904m.], 5-9 February 1966, H. & M. Townes (American Entomological Institute). ♀, Campina Grande nr. Curitiba, [25°18'0"S, 49°4'60"W, 914 m.], 23 February 1966, H. & M. Townes (American Entomological Institute).

Trachagathis pengellyella Sharkey new species (Figs. 1a-c, 4a)

Diagnosis. Hind femur yellow in apical half, hind tibia with 2 white bands, one at the extreme base and one just basal to the mid-point; transverse groove on frons extending to medial side of lateral ocellus (Fig. 1c).

Description. **Holotype Female.** **Length:** 4.03 mm (3.58-4.20). **Head:** Antenna with 29 (28-30) flagellomeres; penultimate labial palpomere slightly less than half as long as apical palpomere; galea short, unmodified, slightly longer than wide (Fig. 1b); malar space not elongate 0.47x eye height; groove between lateral ocellus and compound eye deeply excavated; sharp medial margin of groove mesad lateral ocellus. **Mesosoma:** mesoscutum with irregular punctures; notauli deeply impressed, crenulate; median areola of metanotum acute to rounded apically; propodeum densely areolate rugose, areolae with smaller

rugosities or granulations; pronotum rugose anteroventrally, smooth to weakly granulate posterodorsally; mesopleuron with small scattered punctures, granulate posteriorly; sternaulus deep and crenulate; metapleuron smooth to weakly rugose with a hint of granulate microsculpture; second submarginal cell of forewing small (c.f., Fig. 3c) [barely indicated in the specimen from Nova Teutonia (c.f. Fig. 4d)]; Cub vein of hind wing absent. **Metasoma:** 1st median tergite granular with small longitudinal rugosities anterolaterally; 2nd median tergite weakly granulate, 3rd median tergite smooth; remainder of metasoma smooth; ovipositor slightly shorter than body length. **Colour** (Fig. 1a): Black except as follows: palpi and some mouthparts yellow; all legs except coxae yellow or yellowish brown; middle leg with two weak light bands on tibia, a small one at base and one occupying most of surface except for apex; hind tibia with 2 light bands, one basal and another ending just past midlength (Fig. 4a); 2nd metasomal segment and sterna and laterotergite of 1st metasomal segment yellow.

Males. Unknown.

Biology. Unknown.

Distribution. Tucumán, Argentina, and Nova Teutonia, Brazil.

Etymology. Named in honor David Pengelly whose kindheartedness and gentle encouragement helped me through pivotal years of my university education.

Type Material. Holotype Female. ARGENTINA: Tucumán, San Pedro Colalao, [26°13'60"S, 65°28'60"W, 1056 m.], 1-11 September 1968. L. Stange, (American Entomological Institute). **Paratypes: ARGENTINA:** Tucumán: ♀, same data as holotype except 8 November–8 December 1967, (American Entomological Institute). ♀, Tacanas, [27°7'60"S, 64°49'0"W, 356 m.], 7-17 December 1968, L. Stange, (American Entomological Institute). ♀, Rio Nio [sic = Río del Nío], [26°25'60"S, 64°55'60"W, 886 m.], 30 November 1964, C. C. Porter, (Museum of Comparative Zoology, Harvard). **BRAZIL:** ♀, Nova Teutonia, 27°11'8"S, 52°23'1"W, 300-500 m., 13 February 1969, F. Plaumann, (Canadian National Collection, Ottawa).

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